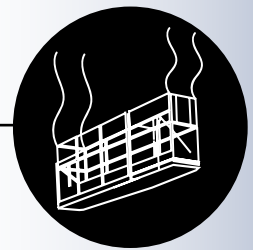




**Division of Occupational
Safety and Health**

Powered Platforms



Chapter 296-870 WAC

January 2007 Edition



Standards Update

Chapter 296-870 WAC, Powered Platforms

Issue Date 1/1/2007

Effective Date 1/1/2007

The Department of Labor and Industries has rewritten and reorganized for clarity and ease of use, the Powered Platform rules in chapters 296-24 WAC. These rules have been adopted and incorporated into Chapter 296-870 WAC, Powered Platforms.

- **Please discard WAC 296-24-880 through 296-24-88035**
- **Please discard WACs 296-24-88040, 88045, and 88055**

To receive future updates of this standard and all other Department of Labor and Industries safety and health standards electronically, please sign up on the WISHA Listserv (<http://www.lni.wa.gov/Safety/Rules/default.htm>). By subscribing to the Listserv, you will also receive rule updates, hearing notices, and informational packets for all safety and health rules.

Also available on the WISHA web site:

- WISHA Core Rules
- Other General WISHA Rules
- Industry and Task-specific Rules
- Proposed rules and hearings
- Newly adopted rules and new rule information
- WISHA Regional Directives (WRDs)
- WISHA Interim Operations and Interpretive Memoranda (WIIM)
- Memoranda of Understanding (MOU)

To receive hardcopy updates of this rule, please return the card located at the back of the book.

Powered Platforms

Chapter 286-870 WAC

Other Rules that may apply to your workplace

- The WISHA Safety and Health Core Rules, Chapter 296-800 WAC, contain the basic requirements that apply to most employers in Washington. They also contain:
 - An Introduction that lists important information you should know, including a section on building, fire and electrical codes.
 - A Resource section that includes a complete list of all WISHA rules and a directory of the Labor and Industries (L&I) offices.
- Other WISHA rules may apply to you, depending on the activities and operations of your workplace. Contact your local L&I office if you're uncertain about which WISHA requirements apply to you.
- To go online to access all the Safety and Health Rules: <http://www.lni.wa.gov/wisha>
- If you would like to receive e-mail notification of rule updates, please register for the Standards Listserv on the WISHA web site at <http://www.lni.wa.gov/home/listservs.htm>
- For a CD or paper copy contact us by:

Mail: Department of Labor and Industries
P.O. Box 44620
Olympia, WA 98504-4620

Telephone: 1-800-4BE-SAFE (1-800-423-7233)

Powered Platforms

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Powered Platforms

Chapter 296-870 WAC

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Powered Platforms

Chapter 296-870 WAC

Scope

This chapter covers permanent powered platform installations dedicated to interior or exterior building maintenance of a specific structure or group of structures.

Building maintenance includes, but isn't limited to, tasks such as window cleaning, caulking, metal polishing, and reglazing.



Exemption:

This chapter doesn't apply to suspended scaffolds covered by a separate chapter, Scaffolds, chapter 296-874 WAC.



Definition:

A **powered platform installation** consists of all the equipment and the parts of the building involved with using the powered platform for building maintenance.



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YOUR RESPONSIBILITY:

To meet these requirements when using powered platforms

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Operations

WAC 296-870-200

Rule

WAC 296-870-20005

Building owner certifications

You must

- Obtain written certification from the building owner of any building with a powered platform installation that was completed or had major modification done after July 23, 1990, that the building and equipment meets the requirements of ***New installations-buildings***, WAC 296-870-600 and ***New installations-equipment***, WAC 296-870-700 of this chapter.



Note:

The building owner needs to base the certification on:

- The field test of the installation done before it's first placed into service or following any major modification to an existing installation
and
- All other relevant available information, including but not limited to:
 - Test data
 - Equipment specifications
 - Verification by a registered professional engineer.

You must

- Obtain written certification from the building owner that the installation:
 - Has been inspected, tested, and maintained as required by ***Inspection, testing, and maintenance***, WAC 296-870-300 of this chapter
and
 - All fall protection anchorages meet the requirements of Appendix C-Personal fall arrest system, WAC 296-24-88050, found in the General Safety and Health Standards, Chapter 296-24 WAC.



WAC 296-870-20010

Personnel requirements

You must

- Prohibit employees from using the installation until the building owner has provided the required written certifications.
- Make sure working platforms are operated only by persons proficient in the operation, safe use and inspection of the particular working platform.



References:

- Building owner certification requirements are found in *Building owner certifications*, WAC 296-870-20005.
- Training requirements for persons using platforms are found in *Training*, WAC 296-870-400.

WAC 296-870-20015

Platform and hoist load limits

You must

- Make sure the load on the working platform doesn't exceed the rated load stated on the platform load rating plate.
- Make sure hoists aren't subjected to a load greater than 125 percent of their rated load.



Operations

WAC 296-870-200

Rule

WAC 296-870-20020

Obstructions and slipping hazards

You must

- Prohibit the accumulation of tools, materials and debris on the platform that aren't related to the work in progress.
- Make sure stabilizer ties are:
 - Located to allow movement along the full length of the platform without interference
- **and**
 - Long enough not to become entangled in rollers, hoists, or other machinery.
- Prohibit employees from working on platforms covered with snow, ice, or other slippery material.



Exemption:

Employees may be on platforms as necessary to remove the slipping hazard.



WAC 296-870-20025

Wind and adverse weather

You must

- Prohibit using powered platforms in:
 - Winds exceeding 25 miles per hour (40.2 km/hr)
- or**
- Any other severe adverse weather conditions.



Exemption:

Employees may use the platform during severe adverse weather conditions only to move it from an operating to a storage position.

You must

- Have an anemometer mounted on the platform of an exterior installation to provide on-site wind velocities before and during use of the platform.



Note:

- Determine wind speed using the best available information, including on-site anemometer readings and local weather forecasts.
- The anemometer may be a portable or hand held unit which is temporarily mounted during platform use.



Operations

WAC 296-870-200

Rule

WAC 296-870-20030

Corrosive substances

You must

- Protect the platform, wire ropes, and lifelines from damage due to acids or other corrosive substances by using the precautions recommended by any of the following:
 - Corrosive substance producer or supplier
 - Platform manufacturer
 - Other equivalent information source.
- Wash down platform members which have been exposed to acids or other corrosive substances with a neutralizing solution as recommended by the corrosive substance producer or supplier.

WAC 296-870-20035

Heat-producing processes

You must

- Protect the platform members, wire ropes, and lifelines when using a heat-producing process.
- Make sure wire ropes and lifelines which have been contacted by a heat-producing process are considered to be permanently damaged and not used.

WAC 296-870-20040

Fall protection

You must

- Protect employees on working platforms with a personal fall arrest system that meets the requirements of Appendix C-Personal fall arrest system, WAC 296-24-88050, found in the General Safety and Health Standards, Chapter 296-24 WAC.

WAC 296-870-20045

Communications

You must

- Make sure the voice communication system between the equipment operators and persons stationed within the building is operable and manned whenever the platform is being used.



Notes

Inspection, Testing, and Maintenance

WAC 296-870-300

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YOUR RESPONSIBILITY:

To make sure powered platforms are inspected, tested, and maintained to keep them in safe operating position

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WAC 296-870-30030	300-8



Inspection, Testing, and Maintenance

WAC 296-870-300

Rule

WAC 296-870-30005

Maintenance

You must

- Make sure all parts of the equipment that affect safe operation are maintained in proper working order so they are able to perform their intended functions. This includes, but isn't limited to, all of the following:
 - Roof systems including roof track systems, tie-downs, or similar equipment
 - Building face guiding members including T-rails, indented mullions, or equivalent guides located in the face of a building
 - Brackets for cable stabilizers.
- Take out of service any equipment that isn't in proper working order.
- Make sure the following parts are kept clean:
 - Control or power contacts and relays

and

 - All other parts whose proper function would be affected by dirt or other contaminants.



Inspection, Testing, and Maintenance

WAC 296-870-300

Rule

WAC 296-870-30010

Initial installation and after major modification inspection and testing

You must

- Make sure a completed powered platform installation has been inspected and tested by the building owner:
 - Before it was first placed into service**and**
 - Before it was returned to service after major modification was done.
- Make sure the inspection and tests determined that:
 - All parts of the installation met the applicable requirements of this chapter**and**
 - All safety and operating equipment functioned as required.



Inspection, Testing, and Maintenance

WAC 296-870-300

Rule

WAC 296-870-30015

Before use inspections and tests

You must

- Complete the inspections and tests contained in Table 1, Before Use Inspections and Tests, before allowing persons to use the platform.

Table 1
Before Use Inspections and Tests

What	When	Inspection and test requirements
Working platforms and their components	<ul style="list-style-type: none">Before every use andAfter each occurrence which might affect the platform's structural integrity	Inspect for visible defects
Suspension wire ropes	<ul style="list-style-type: none">Before every use andAfter each occurrence which might affect the wire rope's integrity	Visible inspection by a competent person for defects and gross damage
Governors and secondary brakes	Before use each day	Test before use. If testing isn't feasible, visually inspect the brake to make sure it's free to operate
Hoists	Each day before lowering personnel below the top elevation of the building	Test in the lifting direction with the intended load to make sure it has sufficient capacity to raise personnel back to the boarding level

Inspection, Testing, and Maintenance

WAC 296-870-300

Rule

WAC 296-870-30020

Periodic inspections and tests

You must

- Make sure the building owner has completed and documented the periodic inspections and tests shown in Table 2.
- Make sure any documentation required by Table 2, Periodic Inspections and Tests, is readily available for your own review and that of the director or an authorized representative.
- Make sure suspension wire rope is used and maintained as specified in the wire rope manufacturer's recommended procedures.
- Remove from service a wire rope that has any of the following:
 - Broken wires exceeding three wires in one strand or 6 wires in one rope lay
 - Distortion of rope structure such as would result from crushing or kinking
 - Evidence of heat damage
 - Evidence of rope deterioration from corrosion
 - A broken wire within 18 inches (460.8 mm) of the end attachments
 - Noticeable rusting and pitting
 - Evidence of core failure. This could be indicated by a lengthening of rope lay, protrusion of the rope core and a reduction in rope diameter
 - More than one valley break (broken wire)
 - Outer wire wear exceeds 1/3 of the original outer wire diameter
 - Any other condition which the competent person determines has significantly affected the integrity of the rope.

- Continued -

Inspection, Testing,
and Maintenance



Inspection, Testing, and Maintenance

WAC 296-870-300

Rule

WAC 296-870-30020

Periodic inspections and tests (Continued)

Table 2
Periodic Inspections and Tests

What to inspect	When to inspect	Inspection and test requirements	Building owner documentation
Related building supporting structures	Intervals not exceeding 12 months	Inspection by a competent person	Keep a certification record of each inspection and test that includes all of the following <ul style="list-style-type: none"> – Date of the inspection – Signature of the person who performed the inspection – Number, or other identifier, of the building support structure and equipment which was inspected
All parts of the equipment including control systems	Intervals specified by the manufacturer or supplier, but not to exceed 12 months	Inspection and test, where necessary, by a competent person to determine: <ul style="list-style-type: none"> – They are in a safe operating condition and – Parts subject to wear, such as wire ropes, bearings, gears, and governors haven't worn to such an extent as to affect the safe operation of the installation 	
Working platform	Every 30 days and Before each work cycle if the work cycle is more than 30 days	Maintenance inspection and test by a competent person following procedures recommended by the manufacturer	Keep a certification record of each inspection and test that includes all of the following: <ul style="list-style-type: none"> – Date of the inspection and test – Signature of the person who performed the inspection and test – An identifier for the platform installation which was inspected

- Continued -

Inspection, Testing, and Maintenance

WAC 296-870-300

Rule

WAC 296-870-30020

Periodic inspections and tests (Continued)

Table 2
Periodic Inspections and Tests

What to inspect	When to inspect	Inspection and test requirements	Building owner documentation
Governors and secondary brakes	Intervals specified by the manufacturer or supplier but not to exceed 12 months	Inspection and test by a competent person. Results need to confirm: <ul style="list-style-type: none">– The initiating device for the secondary braking system operates at the proper overspeed and <ul style="list-style-type: none">– The secondary brake is functioning properly If any hoisting machine or initiating device for the secondary brake system is removed from the equipment for testing, reinspect all reinstalled and directly related components before returning the equipment installation to service	
Suspension wire ropes	<ul style="list-style-type: none">• Once a month for ropes in service and <ul style="list-style-type: none">• Before they are returned to service for ropes that have been out of service for 30 days or more	A thorough inspection by a competent person	Keep a certification record of each monthly inspection that includes all of the following: <ul style="list-style-type: none">– Date of the inspection– Signature of the person who performed the inspection– Number, or other identifier, of the wire rope which was inspected



Inspection, Testing, and Maintenance

WAC 296-870-300

Rule

WAC 296-870-30025

Reshackling and resocketing wire ropes

You must

- Make sure the nondrum ends of hoisting wire ropes are reshackled or, if the rope uses poured socket fastenings, resocketed at intervals not exceeding 24 months.
- Make sure enough rope is cut from the end of the rope during reshackling or resocketing to remove any damaged or fatigued portions.
- Make sure resocketed ropes meet the requirements of Suspension wire ropes and rope connections, WAC 296-870-70085.
- Make sure limit switches affected by resocketed ropes are reset if necessary.

WAC 296-870-30030

Disabling safety or electrical protective devices

You must

- Make sure no person renders any required safety devices or electrical protective devices inoperative unless necessary for tests, inspections, or maintenance.
- Restore any disabled devices to normal operating condition immediately after the test, inspection or maintenance is completed.



Section Contents

YOUR RESPONSIBILITY:

To train employees who operate or inspect powered platforms

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WAC 296-870-40005	400-2
Emergency action plan	
WAC 296-870-40010	400-3
Certification	
WAC 296-870-40015	400-4





Training

WAC 296-870-400

Rule

WAC 296-870-40005

General training

You must

- Make sure employees are trained by a competent person.
- Train employees who operate powered platforms in all of the following:
 - Recognizing safety hazards and the preventative measures to control or minimize hazards that are associated with:
 - Using powered platforms, including those that apply to the specific platform they will be operating
 - and**
 - Their individual work tasks.
 - Emergency action plan procedures
 - Work procedures for operating, safely using and inspecting powered platforms.
- Provide written work procedures for operating, safely using, and inspecting working platforms to be used in employee training.



Note:

Visual presentations, such as graphics and pictures, may be used instead of written work procedures if it improves employee understanding. The powered platform system components manufacturers' operating manuals can serve as the basis for these work procedures.



WAC 296-870-40010

Emergency action plan

You must

- Make sure a written emergency action plan is developed and implemented for each kind of working platform operation that contains at least both of the following:
 - An explanation of the emergency procedures to be followed in the event of any of the following situations:
 - Power failure
 - Equipment failure
 - Other emergencies which may be encountered.
 - That employees are informed about the building emergency escape routes, procedures and alarm systems.
- Review with each employee those parts of the plan they need to know to protect themselves in the event of an emergency:
 - Upon initial assignment

and

 - Whenever the plan is changed.



Training

WAC 296-870-400

Rule

WAC 296-870-40015

Certification

You must

- Certify in writing that employees have been trained in operating and inspecting a working platform.
- Make sure training certifications are:
 - Prepared when the employee has completed training**and**
 - Contain all of the following:
 - Name of the person trained
 - Signature of the person who conducted the training
 - Date training was completed.
- Make sure the training certification is:
 - Maintained while the employee works for you**and**
 - Kept readily available for review by the director or an authorized representative.

Existing Installations

WAC 296-870-500

Section Contents

IMPORTANT:

This section applies to permanent powered platform installations that meet **all** of the following:

- The installation was completed between August 27, 1971, and July 24, 1990
- There has been no major modification to the installation after July 23, 1990
- The working platforms use electric-powered, winding drum type hoisting machines.



Notes:

- Platforms operated by other types of power and using other types of hoisting machines are allowed if they:
 - Have adequate protective devices for the type of power used**and**
 - Provide reasonable safety for persons using or exposed to the equipment
- Other types of hoisting machines include, but aren't limited to, machines such as traction drum hoisting machines, air powered machines, hydraulic powered machines, and internal combustion machines.



Definition:

- An ***existing installation*** is a permanent powered platform installation that:
 - Was completed before July 23, 1990**and**
 - Has had no major modification done after July 23, 1990.



Existing Installations

WAC 296-870-500

Section Contents

YOUR RESPONSIBILITY:

To make sure powered platform installations completed between August 27, 1971, and July 24, 1990, meet these building and equipment requirements

Design, construction, and installation WAC 296-870-50005	500-3
Fall Protection WAC 296-870-50010	500-4
Electrical WAC 296-870-50015	500-5



Existing Installations

WAC 296-870-500

Rule

WAC 296-870-50005

Design, construction, and installation

You must

- Make sure powered platforms designated as Type F meet all the requirements in Part II of ANSI A120.1-1970, American National Standard Safety Requirements for Powered Platforms for Exterior Building Maintenance.



Definition:

- A **Type F powered platform** has both of the following characteristics:
 - The working platform is suspended by at least 4 wire ropes and designed so that failure of any one wire rope won't substantially alter the normal position of the working platform
 - Only one layer of hoisting rope is permitted on the winding drums.

You must

- Make sure powered platforms designated as Type T meet all the requirements in Part III of ANSI A120.1-1970 American National Standard Safety Requirements for Powered Platforms for Exterior Building Maintenance except for section 28, Safety belts and lifelines.



Definition:

A **Type T powered platform** has a working platform that's suspended by at least 2 wire ropes. The platform won't fall to the ground if a wire rope fails, but the working platform's normal position would be upset.





Existing Installations

WAC 296-870-500

Rule

WAC 296-870-50010

Fall protection

You must

- Make sure the fall protection system of both Type F and Type T powered platforms meet the requirements of Appendix C-Personal fall arrest system, WAC 296-24-88050, found in the General Safety and Health Standards, Chapter 296-24 WAC.
- Make sure working platforms have permanent guardrails that meet all of the following requirements:
 - Guardrails on the building side (front) of the platform have a top rail that isn't less than 38 inches and not more than 45 inches high.
 - Guardrails on the other three sides have a top rail that isn't less than 45 inches high.
 - Top rails are able to withstand a force of at least 200 pounds
 - Guardrails have a midrail around the entire platform between the top rail and the toeboard.



Reference:

Ramps and walkways that are 4 feet (1.2 m) or more above a lower level need to have a guardrail system. These requirements are found in Working Surfaces, Guarding Floors and Wall Openings, Ladders, Part J-1, in the General Safety and Health Standards, Chapter 296-24 WAC.

Existing Installations

WAC 296-870-500

Rule

WAC 296-870-50015

Electrical

You must

- Make sure electrical wiring and equipment meets the requirements of the National Electric Code, NFPA 70-1987, ANSI C1-1987, except as modified by ANSI A120.1-1970 American National Standard Safety Requirements for Powered Platforms for Exterior Building Maintenance.
- Make sure runway conductor systems are:
 - Designed for use in exterior locations**and**
 - Located to prevent contact with water or accumulated snow.
- Make sure conductors, collectors, and disconnecting means meet the requirements for cranes and hoists in Article 610 of the National Electrical Code, NFPA 70-1987, ANSI C1-1987.
- Make sure the power conductors are paralleled by a grounded conductor that meets both of the following:
 - It can't be opened by the disconnecting means**and**
 - The system is designed to not pose a hazard to persons in the area.



Notes

New Installations - Buildings

WAC 296-870-600

Section Contents

IMPORTANT:

This section applies to permanent powered platform installations that meet **either** of the following:

- Were completed after July 23, 1990

or

- Have had major modifications done to an existing installation after July 23, 1990.



Definition:

A *new installation* is a permanent powered platform installation that was completed, or an existing installation that has had major modifications done, after July 23, 1990.



Note:

If affected parts of the building meet the requirements of the edition of American National Standard Institute/American Society of Mechanical Engineers ANSI/ASME A120.1, Safety Requirements for Powered Platforms for Building Maintenance, that was in effect when the powered platform installation was completed, they will be considered to meet the requirements of this section.



New Installations - Buildings

WAC 296-870-600

Section Contents

YOUR RESPONSIBILITY:

To make sure new powered platform installations meet these building requirements

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New Installations - Buildings

WAC 296-870-600

Rule

WAC 296-870-60005

Design

You must

- Make sure structural supports, tie-downs, tie-in guides, anchoring devices and any affected parts of the building included in the installation are designed by, or under the direction of, a registered professional engineer experienced in such design.
- Make sure affected parts of the building are capable of sustaining all the loads imposed by the equipment.
- Make sure exterior installations are capable of withstanding prevailing climatic conditions.
- Make sure the affected parts of the building allow employees to use the equipment without being exposed to a hazardous condition.



New Installations - Buildings

WAC 296-870-600

Rule

WAC 296-870-60010

Stabilization systems

You must

- Make sure the exterior of each building is provided with at least one of the following stabilization systems:
 - Continuous tie-in guides
 - Intermittent stabilization system
 - Button guide stabilization system
 - System using angulated roping and building face rollers
 - System equivalent to a continuous tie-in guide system



Exemption:

- Tie-in guides may be eliminated for not more than 75 feet (22.9 m) of the uppermost elevation of the building if:
 - Using tie-in guides there isn't feasible due to building design**and**
 - Angulated roping is used that provides a stabilizing force of at least 10 pounds (44.4 n) under all conditions of loading.

You must

- Make sure embedded tie-down anchors, fasteners, and affected structures are corrosion-resistant.



Helpful Tool:

Typical examples of continuous external or indented mullion guide, intermittent tie-in, and button guide platform stabilization systems can be found in the Resources section of this chapter.



New Installations - Buildings

WAC 296-870-600

Rule

WAC 296-870-60015

Intermittent stabilization system



Note:

This system may be used with a continuous tie-in guide system on the same building as long as the requirements for each system are met.

You must

- Make sure an intermittent stabilization system:
 - Keeps the equipment in constant contact with the building**and**
 - Prevents sudden horizontal movement of the platform.
- Make sure building anchors are located vertically so that:
 - The distance between anchors isn't more than 3 floors or 50 feet (15.3 m), whichever is less**and**
 - Attaching the suspension ropes to the stabilizer ties won't cause the platform to move horizontally across the face of the building.
- Make sure the anchors are positioned horizontally on the building face so as to be symmetrical about the platform suspension ropes.
- Make sure building anchors:
 - Are easily seen by employees**and**
 - Allow a stabilizer tie attachment for each of the platform suspension ropes at each vertical interval.

- Continued -



New Installations - Buildings

WAC 296-870-600

Rule

WAC 296-870-60015

Intermittent Stabilization (continued)

You must

- Make sure building anchors that extend beyond the face of the building have no sharp edges or points.
 - Make sure building anchors don't interfere with the handling or operation of cables, suspension wire ropes and lifelines that may be in contact with the building face.
 - Make sure the building anchors and components can sustain, without failure, at least 4 times the maximum anticipated load applied or transmitted to them.
 - Make sure the building anchors and stabilizer ties can sustain the anticipated horizontal and vertical loads from winds specified for roof storage design which may act on the platform and wire ropes if the platform is stranded on the building face.
 - Make sure the minimum design wind load for each anchor is 300 pounds (1334 n) if 2 anchors share the wind load.
 - Make sure one building anchor and stabilizer tie can sustain the wind load if either:
 - The building anchors have different spacing than the suspension wire rope
- or**
- The building requires different suspension spacings on one platform.



New Installations - Buildings

WAC 296-870-600

Rule

WAC 296-870-60020

Button guide stabilization system

You must

- Make sure the guide buttons are:
 - Coordinated with the platform guide tracks and other platform-mounted equipment**and**
 - Located on the building so they properly engage the guide tracks mounted on the platform.
- Make sure 2 guide buttons engage each guide track at all times except for the initial engagement.
- Make sure guide buttons that extend beyond the face of the building have no sharp edges or points.
- Make sure guide buttons don't interfere with the handling or operation of cables, suspension wire ropes and lifelines that may be in contact with the building face.
- Make sure guide buttons, connections, and seals are either:
 - Able to sustain, without damage, at least the weight of the platform**or**
 - Are prevented by the guide tracks or guide track connectors from having the weight of the platform and its attachments transmitted to them.



New Installations - Buildings

WAC 296-870-600

Rule

WAC 296-870-60025

Stabilization system using angulated roping and building face rollers

You must

- Make sure a stabilization system using angulated roping and building face rollers does all of the following:
 - Keeps the equipment in continuous contact with the building face
 - Prevents sudden horizontal movement of the platform
 - Maintains a stabilizing force of at least 10 pounds (44.4 n) against the face of the building.
- Make sure the suspended portion of the equipment isn't used more than 130 feet (39.6 m) above a safe surface or ground level.

WAC 296-870-60030

Cable stabilization

You must

- Make sure hanging lifelines and all other cables not in tension are stabilized after the initial 200 feet (61 m) of vertical travel of the working platform and every 200 feet (61 m) thereafter.
- Make sure hanging cables which are in constant tension, other than suspended wire ropes, are stabilized after an initial 600 feet (183 m) of vertical travel of the working platform and at intervals of 600 feet (183 m) or less thereafter.



New Installations - Buildings

WAC 296-870-600

Rule

WAC 296-870-60035

Electrical

You must

- Make sure, when full load is applied to the equipment power circuit, that the building electrical wiring doesn't allow more than a 5 percent voltage drop from the building service vault voltage at any power circuit outlet used by the powered platform installation.
- Make sure the equipment power circuit is provided with a disconnect switch that's all of the following:
 - Able to be locked in either the "off" or "on" position
 - Conveniently located with respect to the primary operating area of the equipment to allow equipment operators access to the switch
 - Locked in the "on" position when the equipment is being used.
- Make sure the powered platform equipment power supply is an independent electrical circuit that remains separate from all other equipment within or on the building.



Exemption:

The equipment power circuit may be connected to the electrical circuit supplying power to hand tools used in conjunction with the equipment.



Note:

If the building is provided with an emergency power system, the equipment power circuit may also be connected to the emergency power system.



Reference:

Unless otherwise specified in this section, building electrical installations have to meet the requirements of Electrical, Part L, in the General Safety and Health Standards, Chapter 296-24 WAC.



New Installations - Buildings

WAC 296-870-600

Rule

WAC 296-870-60040

Guarding roofs and other elevated areas

You must

- Make sure employees working on a roof or other elevated working area 4 feet (1.2 m) or more above an adjacent safe surface are protected by a perimeter guarding system.



Reference:

Requirements for the perimeter guarding system are found in Guarding floor and wall openings and holes, WAC 296-24-750, found in the General Safety and Health Standards, Chapter 296-24 WAC.

You must

- Make sure the inboard face of the perimeter guard is:
 - Not more than 6 inches (152 mm) inboard of the inside face of a barrier such as the parapet wall or roof edge curb;**and**
 - Not more than 18 inches (457 mm) from the face of the building.
- Make sure an elevated track system that's designed to be traversed by carriage-supported equipment and located 4 feet (1.2 m) or more above an adjacent safe surface is either:
 - Provided with a walkway and guardrail system**or**
 - Has a working platform that can be lowered, as part of normal operations, to the lower safe surface.
- Make sure personnel have a safe way to access and to egress from the lower safe surface.



New Installations - Buildings

WAC 296-870-600

Rule

WAC 296-870-60045

Moving equipment

You must

- Make sure all carriages and carriage-supported equipment can be traversed to a safe area for storage and maintenance.
- Make sure operational areas for trackless type equipment have structural stops, such as curbs, to prevent equipment from traveling outside its intended travel area.

WAC 296-870-60050

Repair and maintenance

You must

- Make sure repair or major maintenance of parts of the building that provide primary support for suspended equipment doesn't affect the ability of the building to meet the requirements of this chapter.

WAC 296-870-60055

Communications

You must

- Make sure an effective 2-way voice communication system is provided between the equipment operators and persons stationed within the building.



Notes

New Installations - Equipment

WAC 296-870-700

Section Contents



IMPORTANT:

This section applies to permanent powered platform installations that meet either of the following:

- Were completed after July 23, 1990

or

- Have had major modifications done to an existing installation after July 23, 1990.



Definition:

A *new installation* is a permanent powered platform installation that was completed, or an existing installation that has had major modifications done, after July 23, 1990.



Note:

If the powered platform equipment meets the requirements of the edition of American National Standard Institute/American Society of Mechanical Engineers ANSI/ASME A120.1, Safety Requirements for Powered Platforms for Building Maintenance, that was in effect when the powered platform installation was completed, it will be considered to meet the requirements of this section.

YOUR RESPONSIBILITY:

To make sure equipment used with new powered platform installations meets these requirements

Design and construction WAC 296-870-70005	700-3
Carriages WAC 296-870-70010	700-4
Carriage strength and stability WAC 296-870-70015	700-5



New Installations - Equipment

WAC 296-870-700

Section Contents

Carriage traversing WAC 296-870-70020	700-6
Transportable outriggers WAC 296-870-70025	700-7
Davits WAC 296-870-70030	700-9
Hoisting machines WAC 296-870-70035	700-10
Suspended equipment strength and stability WAC 296-870-70040	700-12
Suspended equipment guardrail system WAC 296-870-70045	700-14
Suspended working platforms and manned platforms used on supported equipment WAC 296-870-70050	700-16
Working platform fall protection WAC 296-870-70055	700-18
Two- and four-point suspended working platforms WAC 296-870-70060	700-19
Ground-rigged working platforms WAC 296-870-70065	700-20
Intermittently stabilized working platforms WAC 296-870-70070	700-21
Button guide stabilized working platforms WAC 296-870-70075	700-23
Supported equipment WAC 296-870-70080	700-24
Suspension wire ropes and rope connections WAC 296-870-70085	700-25
Control circuits, power circuits and electrical protective devices WAC 296-870-70090	700-28

New Installations - Equipment

WAC 296-870-700

Rule

WAC 296-870-70005

Design and construction

IMPORTANT:

This section applies to equipment which is part of a powered platform installation, such as platforms, stabilizing components, carriages, outriggers, davits, hoisting machines, wire ropes and electrical components.

You must

- Make sure equipment installations are designed by, or under the direction of, a registered professional engineer experienced in such design.
- Make sure the design uses a minimum live load of 250 pounds (113.6 kg) for each occupant of a suspended or supported platform.
- Make sure equipment exposed to wind when not in service is designed to withstand loads generated by winds of at least 100 miles per hour (44.7 m/s) at 30 feet (9.2 m) above grade.
- Make sure equipment exposed to wind when in service is designed to withstand loads generated by winds of at least 50 miles per hour (22.4 m/s) for all elevations.
- Make sure elevated building maintenance equipment is suspended by one of the following:
 - A carriage
 - Outriggers
 - Davits
 - An equivalent method.
- Make sure bolted connections are self-locking or otherwise secured to prevent loosening by vibration.





New Installations - Equipment

WAC 296-870-700

Rule

WAC 296-870-70010

Carriages

You must

- Make sure each carriage work station is identified by location markings or position indicators.
- Make sure means are provided to lock out the power supply for the carriage.
- Make sure safe access to and egress from the carriage is provided from a safe surface.
- Make sure any carriage access gate is either:
 - Self-closing and self-latching
- **or**
- Provided with an interlock.
- Make sure any operating area on the carriage is protected by a guardrail system.



Reference:

Guardrail system requirements are found in Suspended equipment guardrail system, WAC 296-870-70045.

New Installations - Equipment

WAC 296-870-700

Rule

WAC 296-870-70015

Carriage strength and stability

You must

- Make sure roof carriage system stability is obtained by using gravity, attachment to a structural support, or a combination of gravity and structural attachment.
- Never use a material that can flow as a counterweight to achieve stability.
- Make sure the stability factor against overturning for horizontal traversing of the carriage, including wind and impact effects, isn't less than 2.
- Make sure carriages and their anchorages can resist accidental over-tensioning of the wire ropes suspending the platform. Include in the calculation the effect of 1 1/2 times the stall load of the hoist.
- Make sure all parts of the powered platform installation can withstand, without damage, the forces resulting from a load equal to the stall load of the hoist and 1/2 of the wind load.
- Make sure roof carriages which develop the required stability against overturning by using tie-down devices secured to the building have an interlock which will prevent vertical platform movement unless the tie-down is engaged.





New Installations - Equipment

WAC 296-870-700

Rule

WAC 296-870-70020

Carriage traversing

You must

- Make sure carriages used to suspend powered platforms meet all of the following:
 - The horizontal movement of the carriage is controlled to permit it to be moved safely and to allow accurate positioning of the platform for vertical travel or storage
 - Structural stops and curbs are provided to prevent traversing of the carriage beyond its designed limits of travel
 - Powered carriages are limited to a maximum traversing speed of 50 feet per minute (0.3 m/s)
 - Manually propelled carriages on a smooth level surface require a horizontal force of not more than 100 pounds (444.8 n) per person to initiate a traversing movement.
 - Make sure traversing controls for a powered carriage meet all of the following:
 - Controls are continuous pressure weatherproof type
 - Multiple controls, if provided, only permit operation from one control station at a time
 - An emergency stop device that interrupts power to the carriage drive motors is provided on each end of the carriage.
 - Make sure the operating controls of suspended equipment is connected so that traversing the carriage isn't possible until:
 - The suspended portion of the equipment is at the uppermost designed position for traversing and free of contact with the face of the building or building guides
- and**
- All protective devices and interlocks are in the proper position to allow traversing of the carriage.

- Continued -

New Installations - Equipment

WAC 296-870-700

Rule



WAC 296-870-70020

Carriage traversing (continued)

You must

- Make sure unintentional traversing of the carriage is prevented by providing one of the following:
 - An automatically applied braking or locking system, or the equivalent, for power-traversed or power-assisted carriages
 - A manual or automatic braking or locking system, or the equivalent, for manually propelled carriages.

WAC 296-870-70025

Transportable outriggers

You must

- Make sure transportable outriggers are only used when all of the following are met:
 - They are used with self-powered, ground-rigged working platforms
 - The point of suspension isn't higher than 300 feet (91.5 m) above a safe surface
 - A tie-in guide stabilization system is provided.
- Make sure each outrigger is secured with a tie down to a verified anchorage on the building and meets all of the following:
 - The outrigger is tied down during the entire time it's used
 - The outrigger is tied back with a rope equivalent in strength to the suspension rope
 - The tie-back rope is installed parallel to the centerline of the outrigger
 - The anchorage has a design stability factor against overturning or upsetting of the outrigger of not less than 4.

- Continued -



New Installations - Equipment

WAC 296-870-700

Rule

WAC 296-870-70025

Transportable outriggers (continued)

- Make sure access to and egress from the working platform is from and to a safe surface below the point of suspension.
- Make sure each outrigger has a design stability factor to prevent rollover in the event of an accidental lateral load on the outrigger of not less than 70 percent of the rated load of the hoist.
- Make sure each outrigger is designed to support an ultimate load of not less than 4 times the rated load of the hoist.
- Make sure each outrigger is located so that the suspension wire ropes for 2 point suspended working platforms are parallel.

New Installations - Equipment

WAC 296-870-700

Rule

WAC 296-870-70030

Davits

You must

- Make sure all davit installations are designed and installed to have a stability factor against overturning of not less than 4.
- Make sure access to and egress from the working platform of roof rigged davit systems:
 - Is from a safe surface**and**
 - Doesn't require persons to climb over a building parapet or guardrail.
- Make sure the working platform of a roof rigged davit system has wheels, casters, or a carriage for traversing horizontally.
- Make sure ground rigged davit systems meet all of the following:
 - The point of suspension isn't higher than 300 feet (91.5 m) above a safe surface
 - A tie-in guide stabilization system is provided
 - Access to and egress from the working platform is from a safe surface below the point of suspension.
- Make sure a rotating davit of a ground rigged davit system requires a horizontal force of 40 pounds (177.9 n) or less per person to initiate a rotating movement.
- Make sure a transportable davit or part of a davit weighing more than 80 pounds (36 kg) has means provided for its transport that keep the center of gravity of the davit at or below 36 inches (914 mm) above the safe surface during transport.
- Make sure a transportable davit is provided with a pivoting socket or base that allows the davit to be removed or inserted:
 - At a position of not more than 35 degrees above the horizontal**and**
 - With the complete davit inboard of the building face.
- Make sure means are provided to lock a transportable davit to its socket or base before it's used to suspend the platform.





New Installations - Equipment

WAC 296-870-700

Rule

WAC 296-870-70035

Hoisting machines

You must

- Make sure suspended or supported equipment is raised or lowered only by a hoisting machine.
- Make sure each hoisting machine is all of the following:
 - Powered only by air, electric, or hydraulic sources
 - Capable of raising or lowering 125 percent of the rated load of the hoist
 - Able to arrest any overspeed descent of the load.
- Make sure the stall load of any hoist motor isn't more than 3 times its rated load.
- Make sure any component of a hoisting machine that needs to be lubricated for protection or proper functioning has means provided to apply the lubricant.
- Make sure winding drums, traction drums and sheaves, and directional sheaves used in conjunction with hoisting machines are compatible with, and sized for, the wire rope used.
- Make sure each winding drum:
 - Has a positive means to attach the wire rope to the drum

and

 - The attachment can develop at least 4 times the rated load of the hoist.
- Make sure each hoisting machine is provided with a primary brake that's all of the following:
 - Capable of stopping and holding not less than 125 percent of the lifting capacity of the hoist
 - Directly connected to the drive train of the hoisting machine without using belts, chains, clutches, or set screw type devices
 - Automatically set when power to the prime mover is interrupted.

- Continued -

New Installations - Equipment

WAC 296-870-700

Rule



WAC 296-870-70035

Hoisting machines (continued)

- Make sure each hoisting machine is provided with at least one independent secondary brake that's all of the following:
 - Capable of stopping and holding not less than 125 percent of the lifting capacity of the hoist
 - An automatic emergency type of brake that, if actuated during each stopping cycle, doesn't engage before the hoist is stopped by the primary brake
 - Able to stop and hold the platform within a vertical distance of 24 inches (609.6 mm) after the brake is actuated.



Reference:

Moving parts of a hoisting machine need to be enclosed or guarded as required by another chapter, Machine Safety, Chapter 296-806 WAC.



New Installations - Equipment

WAC 296-870-700

Rule

WAC 296-870-70040

Suspended equipment strength and stability

You must

- Make sure each suspended unit component is:
 - Capable of supporting, without failure, at least 4 times the maximum intended live load applied or transmitted to it
- and**
- Constructed of materials that will withstand the anticipated weather conditions.



Exemption:

The strength requirement doesn't apply to suspension ropes and guardrail systems.

You must

- Make sure each suspended unit has a load rating plate that:
 - Is conspicuously located
- and**
- States the suspended unit weight and rated load.
- Make sure suspended units that don't have the suspension points at the end of the unit:
 - Are continuously stable for any position or use of the live load
- and**
- Maintain at least a 1 1/2 to 1 stability factor against unit upset.
- Make sure each suspended unit has guide rollers, guide shoes, or building face rollers that compensate for variations in building dimensions and for minor horizontal out-of-level variations of the suspended unit.

- Continued -

New Installations - Equipment

WAC 296-870-700

Rule

WAC 296-870-70040

Suspended equipment strength and stability (continued)

- Make sure the working platform of each suspended unit is secured to the building facade by at least one of the following methods:
 - Continuous engagement to building anchors
 - Intermittent engagement to building anchors
 - Button guide engagement
 - Angulated roping and building face rollers
 - A system equivalent to continuous engagement to building anchors.





New Installations - Equipment

WAC 296-870-700

Rule

WAC 296-870-70045

Suspended equipment guardrail system

You must

- Make sure each working platform of a suspended unit has a guardrail system on all sides that consists of a top guardrail, midrail, and a toeboard.
- Make sure the top guardrail is:
 - At least 38 inches (950 mm) high**and**
 - Able to withstand at least a 200 pound (890 n) force in any downward or outward direction.
- Make sure the midrail is able to withstand at least a 75 pound (333 n) force in any downward or outward direction.
- Make sure material encloses the area:
 - Between the top guardrail and the toeboard on the ends and outboard side of the platform**and**
 - Between the midrail and the toeboard on the inboard side of the platform.
- Make sure the material surrounding the platform is:
 - Able to withstand a load of 100 pounds (45.4 kg) applied horizontally over any area of one square foot (.09 m²)**and**
 - Has openings small enough to not allow passage of life lines and potential falling objects.

- Continued -

New Installations - Equipment

WAC 296-870-700

Rule

WAC 296-870-70045

Suspended equipment guardrail system (continued)

- Make sure toeboards are all of the following:
 - Capable of withstanding, without failure, a force of at least 50 pounds (222 n) applied at any point in a downward or horizontal direction
 - At least 4 inches (9 cm) from their top edge to the level of the platform floor
 - Securely fastened in place at the outermost edge of the platform
 - Installed so there isn't more than a one-half inch (1.3 cm) gap between the bottom of the toeboard and the platform floor
 - Solid or with openings not more than one inch (2.5 cm) in the greatest dimension.





New Installations - Equipment

WAC 296-870-700

Rule

WAC 296-870-70050

Suspended working platforms and manned platforms used on supported equipment

You must

- Make sure the width of the working platform is:
 - At least 24 inches (610 mm)**and**
 - Allows a minimum of a 12-inch (305 mm) wide passage at or past any obstruction on the platform.
- Make sure the platform has slip-resistant flooring.
- Make sure any opening in the platform is either:
 - Small enough to prevent passage of life lines, cables, and other potential falling objects**or**
 - Protected by material under the opening which prevents the passage of life lines, cables, and potential falling objects.
- Make sure means are provided to store any cable suspended from above the platform to keep it from accumulating on the floor of the platform.
- Make sure means are provided to secure all tools, water tanks, and other accessories to keep them from moving or accumulating on the floor of the platform.
- Make sure flammable liquids aren't carried on the working platform.
- Make sure a type B-C portable fire extinguisher is provided and securely attached on all working platforms.

- Continued -

New Installations - Equipment

WAC 296-870-700

Rule

WAC 296-870-70050

Suspended working platforms and manned platforms on supported equipment (continued)

You must

- Make sure operating controls for vertical travel of the platform are:
 - Continuous-pressure type**and**
 - Located on the platform.
- Make sure the maximum rated speed of the platform is limited to:
 - 50 feet per minute (0.3 ms) for single speed hoists**and**
 - 75 feet per minute (0.4 ms) for multispeed hoists.
- Make sure access to and egress from a working platform, except for those that land directly on a safe surface, is provided by stairs, ladders, platforms or runways.
- Make sure access gates are self-closing and self-latching.



Reference:

- Requirements for stairs, ladders, platforms and runways are found in other chapters:
 - Working Surfaces, Guarding Floors and Wall Openings, Ladders, Part J-1, in the General Safety and Health Standards, Chapter 296-24 WAC
 - Scaffolds, Chapter 296-874 WAC
 - Ladders, portable and fixed, chapter 296-876 WAC.
- Make sure a suspended platform's suspension system restricts the platform inboard to outboard roll around its longitudinal axis to not more than 15 degrees from the horizontal when moving the live load from the inboard to the outboard side of the platform.



Note:

The roll limitation doesn't apply to supported equipment.





New Installations - Equipment

WAC 296-870-700

Rule

WAC 296-870-70055

Working platform fall protection

You must

- Make sure a secondary wire rope suspension system which prevents the platform from falling if the primary means of support fails is provided on:
 - Working platforms that contain overhead structures which restrict emergency egress**and**
 - Single-point suspended working platforms.
- Make sure each person on the working platform is provided with a fall arrest system that:
 - Meets the requirements of Appendix C-Personal fall arrest system, WAC 296-24-88050, found in the General safety and health standards, chapter 296-24 WAC**and**
 - Uses a horizontal lifeline or direct connection anchorage on platforms that contain overhead structures which restrict emergency egress.
- Make sure platforms suspended by two or more wire ropes are provided with vertical lifelines if failure of one wire rope or suspension attachment will cause the platform to upset.



Note:

Vertical lifelines aren't required for the fall arrest system if a secondary wire rope suspension is used and each person is attached to a horizontal lifeline anchored to the platform.

New Installations - Equipment

WAC 296-870-700

Rule



WAC 296-870-70060

Two-and four-point suspended working platforms

IMPORTANT:

- In addition to these requirements, you also need to meet the requirements of both of the following sections in this chapter:
 - Suspended working platforms and manned platforms used on supported equipment, WAC 296-870-70050
 - Working platform fall protection, WAC 296-870-70055.

You must

- Make sure an emergency electric operating device is provided on roof powered platforms that:
 - Can be used if either the normal operating device located on the platform or the cable connected to the platform fails

and

 - Is mounted in a secured compartment near the hoisting machine.
- Make sure the secured compartment containing the emergency electric operating device:
 - Is labeled with instructions for using the emergency electric operating device

and

 - Has means for opening the compartment mounted in:
 - A break-glass receptacle near the emergency electric operating device

or

 - An equivalent secure and accessible location.



New Installations - Equipment

WAC 296-870-700

Rule

WAC 296-870-70065

Ground-rigged working platforms

IMPORTANT:

- In addition to these requirements, you also need to meet the requirements of both of the following sections in this chapter:
 - Suspended working platforms and manned platforms used on supported equipment, WAC 296-870-70050
 - Working platform fall protection, WAC 296-870-70055.

You must

- Make sure, after each day's use, ground-rigged working platforms are:
 - Disconnected from the power supply within the building**and**
 - Disengaged from its suspension points or secured and stored at grade.

New Installations - Equipment

WAC 296-870-700

Rule



WAC 296-870-70070

Intermittently stabilized working platforms

IMPORTANT:

- In addition to these requirements, you also need to meet the requirements of both of the following sections in this chapter:
 - Suspended working platforms and manned platforms used on supported equipment, WAC 296-870-70050
 - Working platform fall protection, WAC 296-870-70055.

You must

- Make sure each stabilizer tie is equipped with a “quick connect-quick disconnect” device for attachment to the building anchor that:
 - Can’t be accidentally disengaged**and**
 - Is resistant to adverse environmental conditions.
- Make sure the platform has a stopping device that will interrupt the hoist power supply in the event the platform contacts a stabilizer tie during its ascent.
- Make sure intermittently stabilized platforms use stabilizer ties that:
 - Allow the specific attachment length needed to obtain the predetermined angulation of the suspended wire rope**and**
 - Maintain the specific attachment length at all building anchor locations.
- Make sure stabilizer ties can be attached and removed without horizontal movement of the platform.

- Continued -



New Installations - Equipment

WAC 296-870-700

Rule

WAC 296-870-70070

Intermittently stabilized working platforms (continued)

- Make sure platform-mounted equipment and suspension wire ropes:
 - Won't be damaged by the loads from the stabilizer tie or its building anchor;
and
 - Are able to withstand a load that's at least twice the ultimate strength of the stabilizer tie.
- Make sure building face rollers are placed so they don't contact exterior anchors used on the building face.
- Make sure the platform maintains continuous contact with the building face while ascending and descending.

New Installations - Equipment

WAC 296-870-700

Rule



WAC 296-870-70075

Button guide stabilized working platforms

IMPORTANT:

- In addition to these requirements, you also need to meet the requirements of both of the following sections in this chapter:
 - Suspended working platforms and manned platforms used on supported equipment, WAC 296-870-70050
 - Working platform fall protection, WAC 296-870-70055.

You must

- Make sure two guide tracks are mounted on the platform and provide continuous contact with the building face.
- Make sure each guide track on the platform meets all of the following:
 - Engages a minimum of two guide buttons during any vertical travel of the platform after the initial button engagement
 - Is sufficiently maneuverable by platform occupants to permit easy engagement of the guide buttons
 - Can be easily moved into and out of its storage position on the platform.
- Make sure each guide track on the platform of a roof-rigged system has a storage position on the platform.
- Make sure load carrying components of the button guide stabilization system which transmit the load into the platform are either:
 - Able to support the weight of the platform

or

 - Are prevented by the guide track connectors or platform attachments from having the weight of the platform transmitted to the platform attachments.



New Installations - Equipment

WAC 296-870-700

Rule

WAC 296-870-70080

Supported equipment

IMPORTANT:

Manned platforms used on supported equipment need to meet all the requirements, except the inboard to outboard roll limitation, of suspended working platforms and manned platforms used on supported equipment, WAC 296-870-60050.

You must

- Make sure supported equipment uses means other than friction to maintain a vertical position relative to the face of the building.
- Make sure cog wheels or equivalent means are incorporated to provide climbing traction between the supported equipment and the building guides.
- Make sure additional guide wheels or shoes are incorporated as necessary to keep the drive wheels continuously in positive engagement with the building guides.
- Make sure that, at the point where the drive wheels enter the building guides, proper alignment is maintained using launch guide mullions that are:
 - Indexed to the building guides
 - and**
 - Retained in alignment with the building guides.

New Installations - Equipment

WAC 296-870-700

Rule



WAC 296-870-70085

Suspension wire ropes and rope connections

You must

- Make sure each specific installation uses suspension wire ropes and connections or combination cable and connections meeting the specifications recommended by the hoisting machine manufacturer.
- Make sure connections are capable of developing at least 80 percent of the rated breaking strength of the wire rope.
- Make sure each suspension rope has a design factor of at least 10.



Definition:

- The **design factor** is the ratio of the rated strength of the suspension wire rope to the rated working load. It's calculated using the following formula:

$$F = (S \times N) / W \quad \text{Where:}$$

F = Design factor

S = Manufacturer's rated strength of one suspension rope

N = Number of suspension ropes under load

W = Rated working load on all ropes at any point of travel.

Example:

A working platform is suspended by 4 wire ropes (N), each having a rated strength (S) of 3000 pounds. The rated working load of the platform (W) is 1000 pounds. Calculate the design factor (F) as follows:

$$F = (S \times N) / W = (3000 \times 4) / 1000 = 12000 / 1000 = 12$$

- Continued -



New Installations - Equipment

WAC 296-870-700

Rule

WAC 296-870-70085

Suspension wire ropes and rope connections (continued)

You must

- Make sure the minimum grade of suspension wire rope used is improved plow steel or equivalent.
 - Make sure suspension wire ropes are sized to conform with the required design factor, but never less than 5/16 inch (7.94 mm) in diameter.
 - Make sure there isn't more than one reverse bend in 6 wire rope lays.
 - Make sure a suspension wire rope that's to be used at a specific location, and will remain at that location, has a corrosion-resistant tag that:
 - Is securely attached to one of the wire rope fastenings
- and**
- Bears the following wire rope information:
 - Diameter in inches or millimeters (mm)
 - Construction classification
 - Whether nonpreformed or preformed
 - Grade of material
 - Manufacturer's rated strength
 - Manufacturer's name
 - Month and year the ropes were installed
 - Name of the person or company which installed the ropes.
 - Make sure a new tag is installed at each wire rope renewal.

- Continued -

New Installations - Equipment

WAC 296-870-700

Rule

WAC 296-870-70085

Suspension wire ropes and rope connections (continued)

- Make sure when resocketing the wire rope either:
 - The original tag is stamped with the date of resocketing**or**
 - The original tag is retained and a supplemental tag added that shows:
 - The date of resocketing**and**
 - The name of the person or company that resocketed the rope.
- Make sure winding drum type hoists contain at least three wraps of the suspension wire rope on the drum when the suspended unit has reached the lowest possible point of its vertical travel.
- Make sure traction drum and sheave type hoists use wire rope long enough to reach the lowest possible point of vertical travel of the suspended unit, and an additional length of the wire rope of at least 4 feet (1.2 m).
- Make sure suspension wire rope is never lengthened or repaired.
- Make sure babbitted fastenings are never used with suspension wire rope.





New Installations - Equipment

WAC 296-870-700

Rule

WAC 296-870-70090

Control circuits, power circuits and electrical protective devices



Reference:

Unless otherwise specified in this chapter, make sure electrical wiring and equipment meet the requirements of Electrical, Part L in the General Safety and Health Standards, Chapter 296-24 WAC.

You must

- Make sure electrical runway conductor systems are:
 - Designed for use in exterior locations**and**
 - Located so they don't come in contact with accumulated snow or water.
- Make sure cables are protected against damage resulting from over-tensioning or other causes.
- Make sure the control system requires the operator to follow predetermined procedures to operate suspended or supported equipment.
- Make sure the control system has:
 - Devices included to protect the equipment against electrical overloads, 3-phase reversal and phase failure**and**
 - A separate method that's independent of the direction control circuit to break the power circuit in case of an emergency or malfunction.
- Make sure installations where the carriage doesn't have a stability factor of at least 4 against overturning have electrical contacts provided and connected so that the operating devices for suspended or supported equipment will only function when the carriage is located and mechanically retained at an established operating point.

- Continued -

New Installations - Equipment

WAC 296-870-700

Rule



WAC 296-870-70090

Control circuits, power circuits and electrical protective devices (continued)

- Make sure the hoisting or suspension system has overload protection to prevent the equipment from operating in the "up" direction with a load greater than 125 percent of the rated load of the platform.
- Make sure an automatic detector is provided for each suspension point that will do both of the following if a suspension wire rope becomes slack:
 - Interrupt power to all hoisting motors for travel in the "down" direction**and**
 - Apply the primary brakes.



Note:

A continuous-pressure rigging-bypass switch designed for use during rigging is permitted. It can only be used during rigging.

You must

- Make sure upper and lower directional switches are provided that are designed to prevent the travel of suspended units beyond safe upward and downward levels.
- Make sure remote controlled, roof-powered manned platforms have an emergency stop switch located adjacent to each control station on the platform.
- Make sure cables which are in constant tension have overload devices which will prevent the tension in the cable from interfering with:
 - The device that limits the hoist from lifting a load greater than 125 percent of the rated load of the platform**and**
 - The platform roll limiting device required by WAC 296-870-70050, Suspended working platforms and manned platforms used on supported equipment.

Notes

Powered Platforms

WAC 296-870-800

Definitions

Anemometer

An instrument for measuring wind velocity.

Angulated roping

A suspension method where the upper point of suspension is inboard from the attachments on the suspended unit, thus causing the suspended unit to bear against the face of the building.

Building face rollers

A specialized form of guide roller designed to ride on the face of the building wall to prevent the platform from abrading the face of the building and to assist in stabilizing the platform.

Building maintenance

Operations such as window cleaning, caulking, metal polishing, reglazing, and general maintenance on building surfaces.

Cable

A conductor, or group of conductors, enclosed in a weatherproof sheath, that may be used to:

- Supply electrical power or control current for equipment

or

- Provide voice communication circuits.

Carriage

A wheeled vehicle used for the horizontal movement and support of other equipment.

Certification

A written, signed, and dated statement confirming the performance of a requirement.

Combination cable

A cable having both steel structural members capable of supporting the platform, and copper or other electrical conductors insulated from each other and the structural members by nonconductive barriers.



Powered Platforms

WAC 296-870-800

Definitions

Competent person

Someone who:

- Is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees

and

- Has the authority to take prompt corrective measures to eliminate them.

Continuous pressure

Operation of a control by requiring constant manual actuation for the control to function.

Control

A system or mechanism used to regulate or guide the operation of equipment.

Davit

A device, used singly or in pairs, for suspending a powered platform from work, storage and rigging locations on the building being serviced. Unlike outriggers, a davit reacts its operating load into a single roof socket or carriage attachment.

Design factor

The ratio of the rated strength of the suspension wire rope to the rated working load. It's calculated using the following formula:

$$F = (S \times N) / W \quad \text{Where:}$$

F=Design factor

S=Manufacturer's rated strength of one suspension rope

N=Number of suspension ropes under load

W= Rated working load on all ropes at any point of travel.

Equivalent

Alternative design, material or method to protect against a hazard. You have to demonstrate it provides an equal or greater degree of safety for employees than the method, material or design specified in the rule.



Powered Platforms

WAC 296-870-800

Definitions

Existing installation

A permanent powered platform installation that:

- Was completed before July 23, 1990

and

- Has had no major modification done after July 23, 1990.

Ground rigging

A method of suspending a working platform starting from a safe surface to a point of suspension above the safe surface.

Ground rigged davit

A davit which can't be used to raise a suspended working platform above the building face being serviced.

Guide button

A building face anchor designed to engage a guide track mounted on a platform.

Guide roller

A rotating cylindrical member that provides continuous engagement between the suspended or supported equipment and the building guides. It may operate separately or as part of a guide assembly.

Guide shoe

A device that's similar to a guide roller but is designed to provide a sliding contact between the shoe and the building guides.

Hoisting machine

A device intended to raise and lower a suspended or supported unit.





Powered Platforms

WAC 296-870-800

Definitions

Installation

A powered platform installation consists of all the equipment and the parts of the building involved with using the powered platform for building maintenance.

Interlock

A device designed to ensure that operations or motions occur in proper sequence.

Intermittent stabilization

A method of platform stabilization in which the angulated suspension wire ropes are secured to regularly spaced building anchors.

Lanyard

A flexible line of rope, wire rope or strap which is used to secure the body harness to a deceleration device, lifeline or anchorage.

Lifeline

A component consisting of a flexible line that connects to an anchorage at one end to hang vertically (vertical lifeline), or that connects to anchorages at both ends to stretch horizontally (horizontal lifeline). It serves as a means for connecting other components of a personal fall arrest system to the anchorage.

Live load

The total static weight of workers, tools, parts, and supplies that the equipment is designed to support.

New installation

A permanent powered platform installation that was completed, or an existing installation that has had major modifications done, after July 23, 1990.

Operating control

A mechanism regulating or guiding the operation of equipment that makes sure the equipment operates in a specific mode.

Powered Platforms

WAC 296-870-800

Definitions

Operating device

A push button, lever, or other manual device used to actuate a control.

Outrigger

A device, used singly or in pairs, for suspending a working platform from work, storage, and rigging locations on the building being serviced. Unlike davits, an outrigger reacts its operating moment load as at least two opposing vertical components acting into two or more distinct roof points and/or attachments.

Poured socket

A method of providing wire rope termination in which the ends of the rope are held in a tapered socket by means of poured spelter or resins.

Primary brake

A brake designed to be applied automatically whenever power to the prime mover is interrupted or discontinued.

Prime mover

The source of mechanical power for a machine.

Rated load

The manufacturer's specified maximum load.

Rated strength

The strength of wire rope, as designated by its manufacturer or vendor, based on standard testing procedures or acceptable engineering design practices.

Rated working load

The combined static weight of workers, materials, and suspended or supported equipment.

Registered professional engineer

A person who has been duly and currently registered and licensed by an authority within the United States or its territories to practice the profession of engineering.





Powered Platforms

WAC 296-870-800

Definitions

Roof-powered platform

A powered platform having the raising and lowering mechanism located on the roof.

Roof-rigged davit

A davit used to raise the suspended working platform above the building face being serviced. This type of davit can also be used to raise a suspended working platform which has been ground rigged.

Rope

The equipment, such as wire rope, that's used to suspend a component of an equipment installation.

Safe surface

A horizontal surface that provides reasonable assurance that personnel occupying the surface will be protected from falls. This protection can be provided by location, a fall protection system, or other equivalent method.

Secondary brake

A brake designed to arrest the descent of the suspended or supported equipment in the event of an overspeed condition.

Stability factor

The ratio of the stabilizing moment to the overturning moment.

Stabilizer tie

A flexible line connecting the building anchor and the suspension wire rope supporting the platform.

Supported equipment

Building maintenance equipment that's held in or moved to its working position by means of attachment directly to the building or extensions of the building being maintained.

Powered Platforms

WAC 296-870-800

Definitions

Suspended equipment

Building maintenance equipment that's suspended and raised or lowered to its working position by means of ropes or combination cables attached to some anchorage above the equipment.

Tie-in guides

The portion of a building that provides continuous positive engagement between the building and a suspended or supported unit during its vertical travel on the face of the building.

Transportable outriggers

Outriggers designed to be moved from one work location to another.

Type F powered platform

A powered platform that has both of the following characteristics:

- The working platform is suspended by at least 4 wire ropes and designed so that failure of any one wire rope won't substantially alter the normal position of the working platform
- Only one layer of hoisting rope is permitted on the winding drums.

Type T powered platform

A powered platform installation that has a working platform suspended by at least 2 wire ropes. The platform won't fall to the ground if a wire rope fails, but the working platform's normal position would be upset.

Weatherproof

Constructed or protected so that exposure to the weather won't interfere with successful operation.

Winding drum hoist

A type of hoisting machine that accumulates the suspension wire rope on the hoisting drum.



Powered Platforms

WAC 296-870-800

Definitions

Working platform

The suspended or supported equipment intended to provide access to the face of the building and manned by persons engaged in building maintenance.

Wrap

One complete turn of the suspension wire rope around the surface of a hoist drum.



Powered Platforms

Chapter 296-870 WAC

Resources

Helpful Tools

Examples of Typical Platform Stabilization SystemsR-3



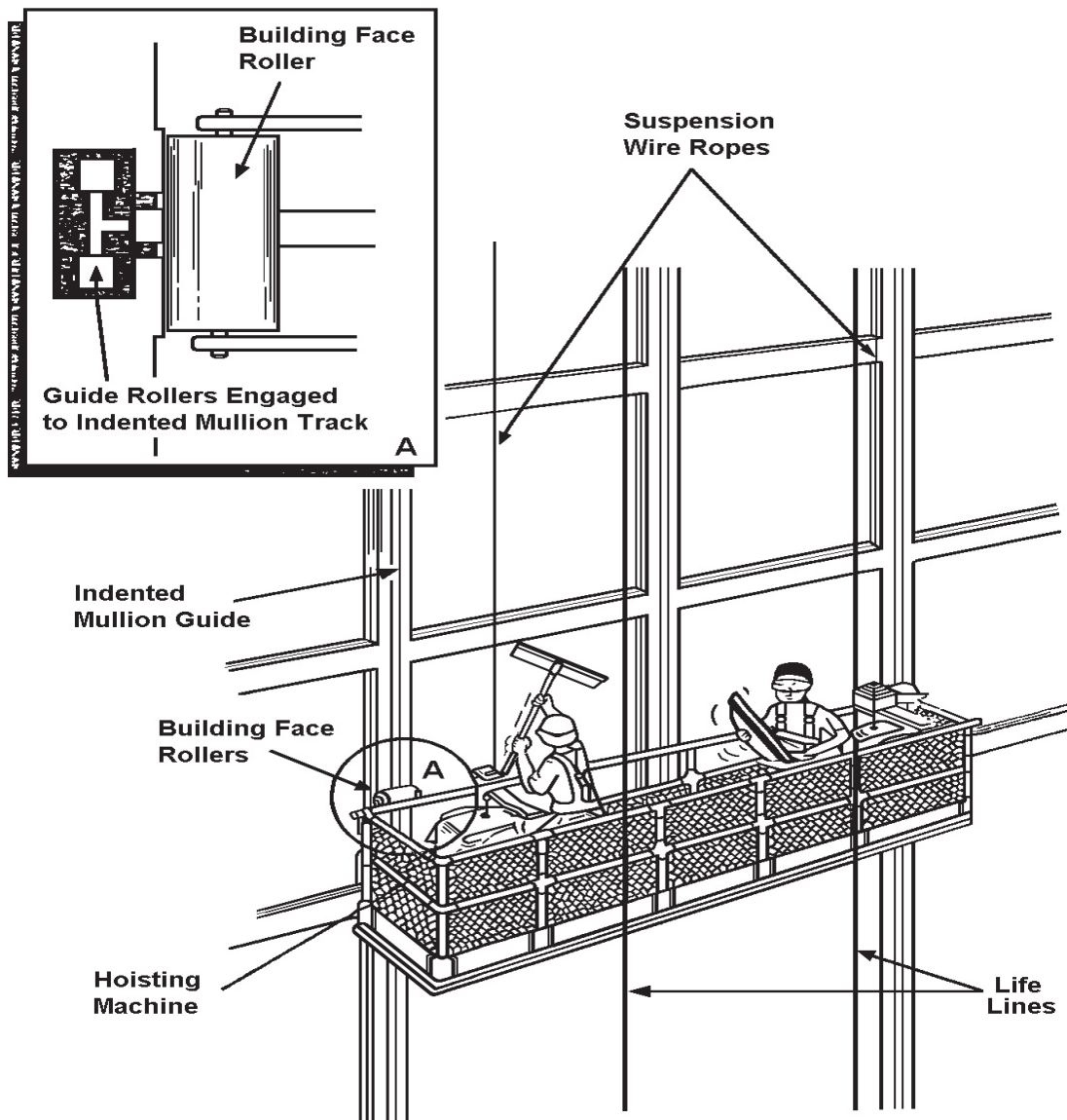
Notes

Examples of Typical Platform Stabilization Systems

Use with the Powered Platforms rule, Chapter 296-870 WAC

The three drawings in this helpful tool illustrate typical platform stabilization systems which are addressed in the Powered Platform rule. The drawings are to be used for reference purposes only, and don't illustrate all the mandatory requirements for each system.

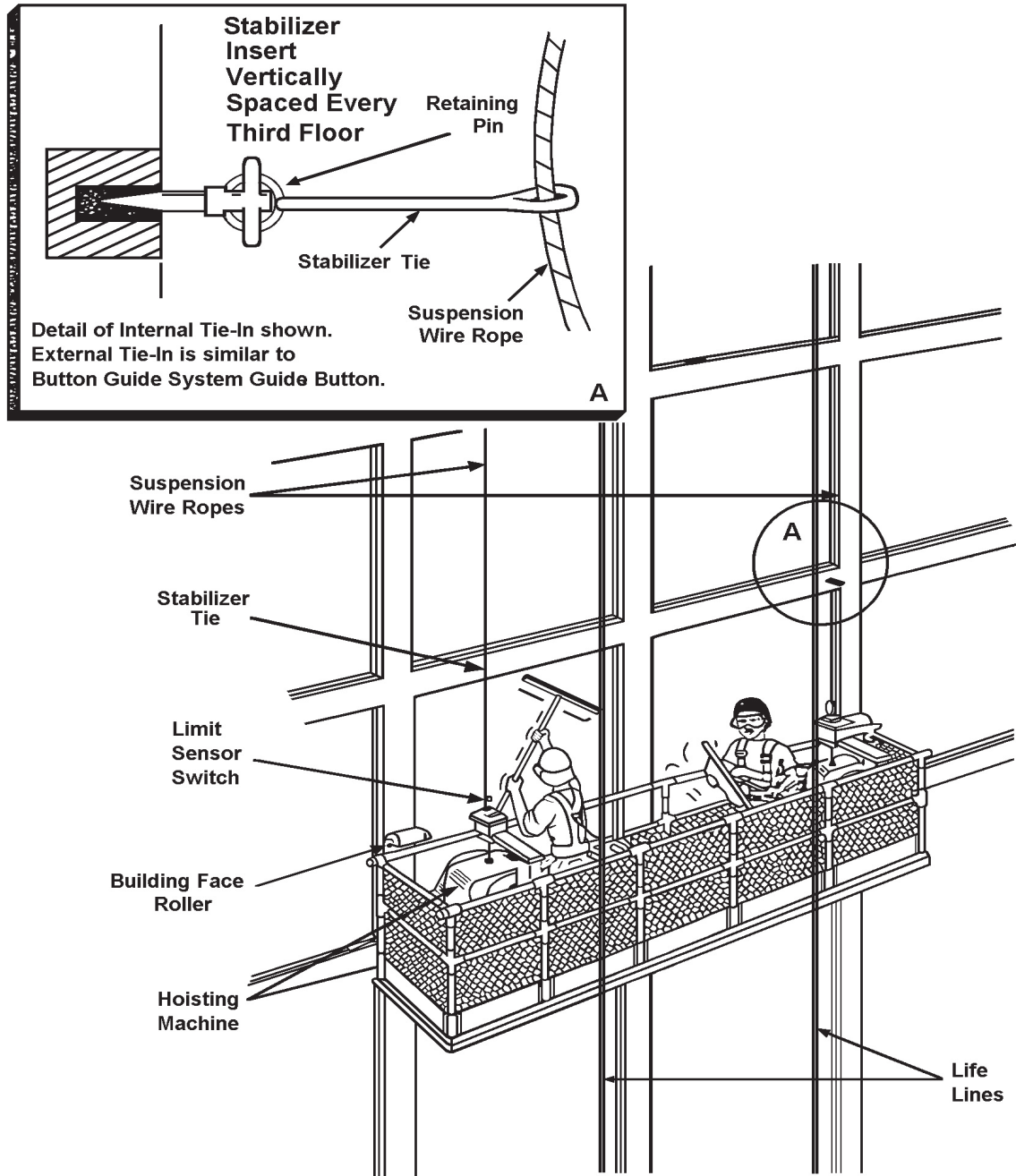
Typical Self Powered Platform Continuous External or Indented Mullion Guide System



Examples of Typical Platform Stabilization Systems

Use with the Powered Platforms rule, Chapter 296-870 WAC

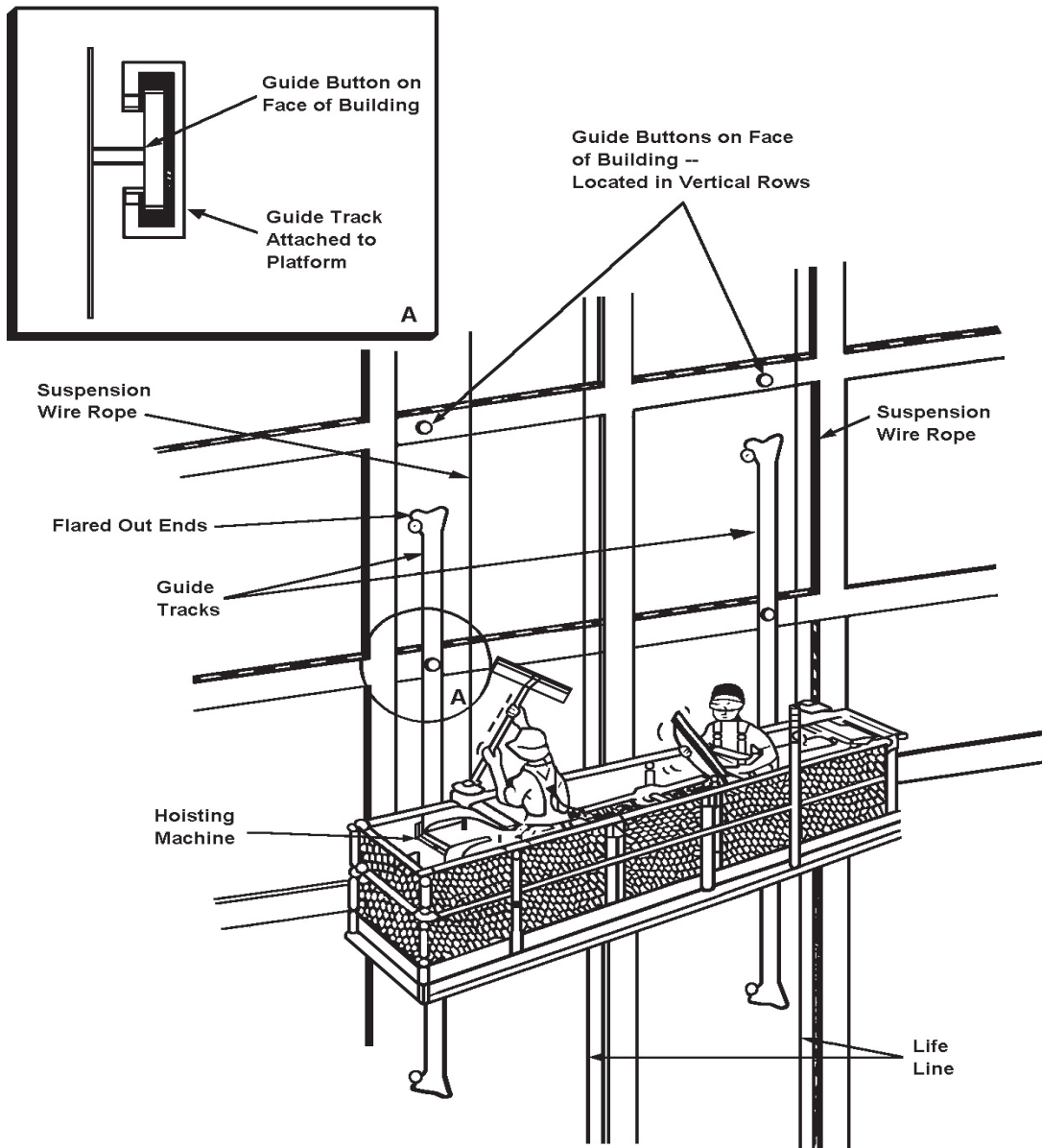
Typical Self Powered Platform Intermittent Tie-in System



Examples of Typical Platform Stabilization Systems

Use with the Powered Platforms rule, Chapter 296-870 WAC

Typical Self Powered Platform Button Guide System



Notes

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Chapter 296-870 WAC

Statutory Authority

296-870-100 Scope.

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-19-075 (Order 06-24), § 296-870-100, filed 09/19/06, effective 01/01/07]

296-870-200 Operations.

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-19-075 (Order 06-24), § 296-870-200, filed 09/19/06, effective 01/01/07]

296-870-20005 Building owner certifications.

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-19-075 (Order 06-24), § 296-870-20005, filed 09/19/06, effective 01/01/07]

296-870-20010 Personnel requirements.

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-19-075 (Order 06-24), § 296-870-20010, filed 09/19/06, effective 01/01/07]

296-870-20015 Platform and hoist load limits.

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-19-075 (Order 06-24), § 296-870-20015, filed 09/19/06, effective 01/01/07]

296-870-20020 Obstructions and slipping hazards.

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-19-075 (Order 06-24), § 296-870-20020, filed 09/19/06, effective 01/01/07]

296-870-20025 Wind and adverse weather.

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-19-075 (Order 06-24), § 296-870-20025, filed 09/19/06, effective 01/01/07]

296-870-20030 Corrosive substances.

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-19-075 (Order 06-24), § 296-870-20030, filed 09/19/06, effective 01/01/07]

296-870-20035 Heat-producing processes.

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-19-075 (Order 06-24), § 296-870-20035, filed 09/19/06, effective 01/01/07]

296-870-20040 Fall protection.

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-19-075 (Order 06-24), § 296-870-20040, filed 09/19/06, effective 01/01/07]

296-870-20045 Communications.

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-19-075 (Order 06-24), § 296-870-20045, filed 09/19/06, effective 01/01/07]

296-870-300 Inspection, testing, and maintenance.

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-19-075 (Order 06-24), § 296-870-300, filed 09/19/06, effective 01/01/07]

296-870-30005 Maintenance.

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-19-075 (Order 06-24), § 296-870-30005, filed 09/19/06, effective 01/01/07]

296-870-30010 Initial installation and after major modification inspection and testing.

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-19-075 (Order 06-24), § 296-870-30010, filed 09/19/06, effective 01/01/07]

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296-870-30015 Before use inspections and tests.

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-19-075 (Order 06-24), § 296-870-30015, filed 09/19/06, effective 01/01/07]

296-870-30020 Periodic inspections and tests.

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-19-075 (Order 06-24), § 296-870-30020, filed 09/19/06, effective 01/01/07]

296-870-30025 Reshackling and resocketing wire ropes.

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-19-075 (Order 06-24), § 296-870-30025, filed 09/19/06, effective 01/01/07]

296-870-30030 Disabling safety or electrical protective devices.

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-19-075 (Order 06-24), § 296-870-30030, filed 09/19/06, effective 01/01/07]

296-870-400 Training.

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-19-075 (Order 06-24), § 296-870-400, filed 09/19/06, effective 01/01/07]

296-870-40005 General training.

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-19-075 (Order 06-24), § 296-870-40005, filed 09/19/06, effective 01/01/07]

296-870-40010 Emergency action plan.

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-19-075 (Order 06-24), § 296-870-40010, filed 09/19/06, effective 01/01/07]

296-870-40015 Certification.

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-19-075 (Order 06-24), § 296-870-40015, filed 09/19/06, effective 01/01/07]

296-870-500 Existing installations.

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-19-075 (Order 06-24), § 296-870-500, filed 09/19/06, effective 01/01/07]

296-870-50005 Design, construction, and installation.

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-19-075 (Order 06-24), § 296-870-50005, filed 09/19/06, effective 01/01/07]

296-870-50010 Fall protection.

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-19-075 (Order 06-24), § 296-870-50010, filed 09/19/06, effective 01/01/07]

296-870-50015 Electrical.

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-19-075 (Order 06-24), § 296-870-50015, filed 09/19/06, effective 01/01/07]

296-870-600 New installations-buildings.

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-19-075 (Order 06-24), § 296-870-600, filed 09/19/06, effective 01/01/07]

296-870-60005 Design.

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-19-075 (Order 06-24), § 296-870-60005, filed 09/19/06, effective 01/01/07]

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Statutory Authority

296-870-60010 Stabilization systems.

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-19-075 (Order 06-24), § 296-870-60010, filed 09/19/06, effective 01/01/07]

296-870-60015 Intermittent stabilization system.

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-19-075 (Order 06-24), § 296-870-60015, filed 09/19/06, effective 01/01/07]

296-870-60020 Button guide stabilization system.

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-19-075 (Order 06-24), § 296-870-60020, filed 09/19/06, effective 01/01/07]

296-870-60025 Stabilization system using angulated roping and building face rollers.

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-19-075 (Order 06-24), § 296-870-60025, filed 09/19/06, effective 01/01/07]

296-870-60030 Cable stabilization.

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-19-075 (Order 06-24), § 296-870-60030, filed 09/19/06, effective 01/01/07]

296-870-60035 Electrical.

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-19-075 (Order 06-24), § 296-870-60035, filed 09/19/06, effective 01/01/07]

296-870-60040 Guarding roofs and other elevated areas.

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-19-075 (Order 06-24), § 296-870-60040, filed 09/19/06, effective 01/01/07]

296-870-60045 Moving equipment.

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-19-075 (Order 06-24), § 296-870-60045, filed 09/19/06, effective 01/01/07]

296-870-60050 Repair and maintenance.

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-19-075 (Order 06-24), § 296-870-60050, filed 09/19/06, effective 01/01/07]

296-870-60055 Communications.

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-19-075 (Order 06-24), § 296-870-60055, filed 09/19/06, effective 01/01/07]

296-870-700 New installations-equipment.

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-19-075 (Order 06-24), § 296-870-700, filed 09/19/06, effective 01/01/07]

296-870-70005 Design and construction.

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-19-075 (Order 06-24), § 296-870-70005, filed 09/19/06, effective 01/01/07]

296-870-70010 Carriages.

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-19-075 (Order 06-24), § 296-870-70010, filed 09/19/06, effective 01/01/07]

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Statutory Authority

296-870-70015 Carriage strength and stability.

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-19-075 (Order 06-24), § 296-870-70015, filed 09/19/06, effective 01/01/07]

296-870-70020 Carriage traversing.

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-19-075 (Order 06-24), § 296-870-70020, filed 09/19/06, effective 01/01/07]

296-870-70025 Transportable outriggers.

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-19-075 (Order 06-24), § 296-870-70025, filed 09/19/06, effective 01/01/07]

296-870-70030 Davits.

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-19-075 (Order 06-24), § 296-870-70030, filed 09/19/06, effective 01/01/07]

296-870-70035 Hoisting machines.

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-19-075 (Order 06-24), § 296-870-70035, filed 09/19/06, effective 01/01/07]

296-870-70040 Suspended equipment strength and stability.

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-19-075 (Order 06-24), § 296-870-70040, filed 09/19/06, effective 01/01/07]

296-870-70045 Suspended equipment guardrail system.

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-19-075 (Order 06-24), § 296-870-70045, filed 09/19/06, effective 01/01/07]

296-870-70050 Suspended working platforms and manned platforms used on supported equipment.

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-19-075 (Order 06-24), § 296-870-70050, filed 09/19/06, effective 01/01/07]

296-870-70055 Working platform fall protection.

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-19-075 (Order 06-24), § 296-870-70055, filed 09/19/06, effective 01/01/07]

296-870-70060 Two-and four-point suspended working platforms.

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-19-075 (Order 06-24), § 296-870-70060, filed 09/19/06, effective 01/01/07]

296-870-70065 Ground-rigged working platforms.

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-19-075 (Order 06-24), § 296-870-70065, filed 09/19/06, effective 01/01/07]

296-870-70070 Intermittently stabilized working platforms.

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-19-075 (Order 06-24), § 296-870-70070, filed 09/19/06, effective 01/01/07]

296-870-70075 Button guide stabilized working platforms.

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-19-075 (Order 06-24), § 296-870-70075, filed 09/19/06, effective 01/01/07]

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Statutory Authority

296-870-70080 Supported equipment.

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-19-075 (Order 06-24), § 296-870-70080, filed 09/19/06, effective 01/01/07]

296-870-70085 Suspension wire ropes and rope connections.

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-19-075 (Order 06-24), § 296-870-70085, filed 09/19/06, effective 01/01/07]

296-870-70090 Control circuits, power circuits and electrical protective devices.

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-19-075 (Order 06-24), § 296-870-70090, filed 09/19/06, effective 01/01/07]

296-870-800 Definitions.

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-19-075 (Order 06-24), § 296-870-800, filed 09/19/06, effective 01/01/07]



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